

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| Applicant:  | Jörg Peter, et al.  | ) Examiner         |
| Serial No.: | 10/551,006          | ) Patel, Vishal A. |
| Filed:      | 09/27/2005          | ) Group Art        |
| For:        | SEALING ARRANGEMENT | ) 3676             |
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|             |                     | May 2009           |

AMENDMENT

Commissioner for Patents  
P.O. Box 1450  
Arlington, Virginia 22313-1450

In response to an Office Action mailed March 16, 2009, and in conjunction with the accompanying Request for Continued Examination, please amend the hereinabove referenced patent application as follows:

IN THE CLAIMS

Please amend the claims as follows:

1. (Cancelled)

2. (Previously Presented) Sealing arrangement according to claim 10 wherein in an unpressurized state, an inner radius of the U-cup seal decreases continuously from the low-pressure side towards the inner sealing lip.

3. (Previously Presented) Sealing arrangement according to claim 2, wherein in the unpressurized state, the inner radius of the U-cup seal conically decreases from the low-pressure side towards the inner sealing.

4. (Previously Presented) Sealing arrangement according to claim 10 wherein in an unpressurized state, the abutment surface of the U-cup seal is, in part, convex.

5. (Previously Presented) Sealing arrangement according to claim 10 wherein the U-cup has an outer concave surface adjacent a groove bottom in the unpressurized state.

6. (Previously Presented) Sealing arrangement according to claim 10 wherein in an unpressurized state, an outer radius of the U-cup seal increases continuously from the low-pressure side towards the outer sealing lip.

7. (Previously Presented) Sealing arrangement according to claim 10 wherein the U-cup seal has an outer

surface facing away from the movable piston and that in an unpressurized state, an outer edge of the U-cup seal is formed convex in a transition region between abutment surface and outer surface.

8. (Previously Presented) Sealing arrangement according to claim 10 wherein the U-cup seal has an inner surface facing the movable machine part (1), with calotte shells as a microstructure.

9. (Cancelled)

10. (Currently Amended) Sealing arrangement comprising a U-cup of a viscoplastic synthetic material, a stationary machine part, and a translatable movable machine part with an outer radius  $R$ , wherein the U-cup is disposed as a contacting joint under radial prestress between the stationary machine part and the movable machine part in a profiled section of the stationary machine part, wherein the U-cup has a radially outer and a radially inner sealing lip on a high-pressure side, wherein the stationary and the movable machine parts are separated on a low-pressure side by ~~of~~ a sealing gap width  $B$ , wherein an abutment surface of the U-cup abuts a radially oriented region of the profiled section on the low-pressure side, wherein the U-cup has an inner radius and an outer radius, wherein both in the unpressurized state and in the pressurized state, the inner radius of the U-cup in the region of the abutment surface is larger than the sum of  $R$  and  $B$  and wherein the U-cup comprises an inner surface facing the movable machine part, wherein the inner surface comprises several ~~lubrication~~ liquid dragging bore reliefs formed as recesses in the

inner surface of the U-cup causing ~~for transferring~~ hydraulic liquid, disposed on a surface of the translatable movable machine part, ~~to be dragged from~~ a low pressure region to a high pressure region upon translatable movement of the movable machine part, wherein the recesses each extend in an axial direction from the low pressure side N of the U-cup towards the inner sealing lip, and the radial depth of the individual recesses decreases from the low-pressure side N of the U-cup towards the inner sealing lip, the recesses being spaced apart from the moveable machine part in an unpressurized state.

REMARKS

Amendment to independent claim 10 has been made to more clearly define the present invention and to more clearly defining in structural terms the "bore relief" as a "liquid dragging bore relief". Support for this amendment is found in the original specification as well as the earlier present claims.

While the function of the liquid dragging bore relief is set forth in the claim, it is clear that there is now present a structural definition of the relief.

The Examiner has rejected claims 10, 2-3, 5, and 8 under 35 USC 103(a) as being unpatentable over U.S. 5,127,661 to Franson, et al. in view of U.S. 3,497,225 to Workman. In this rejection, the Examiner has stated that Franson discloses the invention substantially as claimed but fails to disclose that the inner surface comprises several lubrication bore reliefs which extend in an axial direction from the low pressure side of the U-cup toward the inner ceiling lip with the radial depth of the individual resources decreasing from the low pressure side of the U-cup toward the inner ceiling lip.

The Examiner then looks to Workman for disclosing the ceiling member having a lip with an inner surface having recesses.

The Applicants submit that this is an improper combination. First, the ceiling means of Workman are used

to prevent leakage along the surface of a rotatable cylindrical shaft as stated in column 1, lines 58-63.

The combination is improper since Franson, et al. is directed to translatory movable machine parts and Workman is directed to rotatable cylinder shafts.

As the sealing means for both of these applications is substantially different, a person skilled in the art would not combine the features of the different seals.

In addition, the recesses of Workman's seal are only used to decrease friction resistance between the ceiling means and a movable machine part.

The Examiner has stated that Workman teaches a seal with a lubricant return. The Applicants fail to see this teaching, particularly when workman provides a static-dynamic fluid seal for "preventing the axial leakage of oil or other fluids along the surface of the rotatable cylinder shaft...", column 1, lines 16-61.

Thus, the recesses of Workman cannot provide a dragging of liquid from a low to high-pressure regions. This is further verified by the fact that the recesses of Workman's seal are broader in a direction from low-pressure side to the high-pressure side.

Thus, the Applicants submit that the Examiner has not made a prima facie case of obviousness under 35 USC 103(a) on the basis of the Franson, et al. and Workman references and withdrawal of this rejection is respectfully requested.

Claims 4 and 6-7 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over Franson and Workman, and further in view of U.S. 3,189,359 to Haberkorn. In this rejection, the Examiner has acknowledged that Franson and Workman fail to disclose the outer and inner surface near the abutment as being convex and therefore looks to Haberkorn for teaching a seal having a U-shaped having an abutment surface and an inner surface and an outer surface adjacent to the abutment surface that are convex, like a circular arc.

The Applicants submit that Haberkorn fails to teach the essentials of the invention and further in view of the fact that the independent claim 10 is non-obvious under 35 USC 103, any claim depending therefrom is non-obvious. *In re Fine*, 5 USPQ 2d 1596 (Fed. Cir. 1988).

In view of the arguments hereinabove set forth and amendment to the claims, it is submitted that each of the claims now in the application define patentable subject matter not anticipated by the art of record and not obvious to one skilled in this field who is aware of the references of record. Reconsideration and allowance are respectfully requested.

Respectfully submitted,



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